

CLAIMS

WHAT IS CLAIMED IS:

1. A process for the trenchless installation of an underground product pipe from a first location to a second location at a predetermined depth, comprising:

5 digging a first access shaft at the first location and a target access shaft at the second location to the predetermined depths;

 installing a pipe displacement machine in the first access shaft;

 jacking a steerable pilot tube and additional pilot tube sections into the ground from the first access shaft to the target shaft displacing the soil to form
10 a pilot pipe from the first access shaft to the target shaft;

 installing a drill string from above ground to replace the pilot pipe;

 attaching a back reamer of a first diameter to the drill string at the target shaft with a product pipe coupled to the back side of the back reamer;
and

15 pulling the back reamer and product pipe from the target shaft to the first access shaft.

2. A process for the trenchless underground product pipe from a first location to a second location at a predetermined depth, comprising:

20 digging a first access shaft at the first location and a target access shaft at the second location to the determined depths;

 installing a pipe displacement machine in the first access shaft;

 jacking a steerable pilot tube in additional pilot tube sections into the ground from the first access shaft to the target shaft displacing the soil about the pilot tubes to form pilot pipe from the first access shaft to the target shaft;

25 installing a drill string from above ground at a distance from the first access shaft to replace the pilot pipe;

continuing the installation of the drill string through the target shaft to exit the ground at an exit opening a distance from the target shaft;

attaching a back reamer of a first diameter to the drill string at the surface a distance from the target shaft with a product pipe coupled to the back side of the back reamer;

pulling the back reamer and product pipe from the exit opening to the target shaft and to the first access shaft; and

filling in the bore formed between the target shaft and the surface exit opening.

10 3. The process of claim 2, wherein the drill string is installed utilizing a horizontal directional drilling machine.

4. The process of claim 3, wherein the horizontal directional drilling machine is positioned from the first access shaft a distance of at least 15 feet with at least 5 feet of distance for each foot that the pilot pipe is below the surface.

15 5. The process of claim 3, wherein the back reamer is pulled through the bore formed by the drill string by reverse pulling of the horizontal directional drilling machine.

6. The process of claim 2, wherein the product pipe is a continuous length of pipe.

20 7. The process of claim 1, wherein the drill string is installed utilizing a horizontal directional drilling machine.

8. The process of claim 1, wherein the horizontal directional drilling machine is positioned from the first access shaft a distance of at least 15 feet with at least 5 feet of distance for each foot that the pilot pipe is below the surface.

25 9. The process of claim 1, wherein the back reamer is pulled through the bore formed by the drill string by reverse pulling of the horizontal directional drilling machine.